UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,195	11/08/2001	Reinder Jaap Bril	PHNL 000608	2144

24737	7590	01/24/2006

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EXAMINER
BULLOCK JR, LEWIS ALEXANDER

ART UNIT	PAPER NUMBER
2195	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)	
Office Action Summary	10/008,195	BRIL ET AL.	
	Examiner	Art Unit	
	Lewis A. Bullock, Jr.	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 10/21/05.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>08 November 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed

to non-statutory subject matter. M.P.E.P. 2106 details

> Claims to processes that do nothing more than solve mathematical problems or
> manipulate abstract ideas or concepts are more complex to analyze and are addressed
> below.
>
> If the "acts" of a claimed process manipulate only numbers, abstract concepts or ideas,
> or signals representing any of the foregoing, the acts are not being applied to appropriate
> subject matter. *Schrader,* 22 F.3d at 294-95, 30 USPQ2d at 1458-59. Thus, a process
> consisting solely of mathematical operations, i.e., converting one set of numbers into
> another set of numbers, does not manipulate appropriate subject matter and thus cannot
> constitute a statutory process.

> In practical terms, claims define nonstatutory processes if they:
>   – consist solely of mathematical operations without some claimed practical application
>   (i.e., executing a "mathematical algorithm"); or
>   – simply manipulate abstract ideas, e.g., a bid (*Schrader,* 22 F.3d at 293-94, 30
>   USPQ2d at 1458-59) or a bubble hierarchy (*Warmerdam,* 33 F.3d at 1360, 31
>   USPQ2d at 1759), without some claimed practical application.

Therefore, because claims 1-20 detail the solving of mathematical problems, i.e.

a process or software system that simply performs determining operations, the claims

are non-statutory. The cited step would have to produce either a physical

transformation or a useful, concrete, and tangible result. A determination of the best

case response time does not either produce a physical transformation or is a useful,

concrete, and tangible result as defined and used in the claims.   In addition, claims 7-

10 and 19 are not tangible. The cited system is capable of being a software system, i.e.

a software structure that cannot be perceived by touch and therefore would constitute

an abstract apparatus or idea. Claim 11 details a computer program product, i.e.

computer program. M.P.E.P. 2106 details that a computer program without a computer

readable medium to realize the functionality of the computer program is considered non-

statutory.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3.   Claims 1-6, 11, 12, 17, 18, and 20 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention. Applicant amends the claims

such to a method of operating a device for determining a best-case response time of a

first periodic tasks performed within the device. However, the claims have no steps or

perform no function for operating a device. The claimed steps deal with performing

mathematical calculations to determine a best-case response time. There are no steps

directed toward operating a device as detailed in the preamble. Therefore, the claim

limitations to don't particularly point out and distinctly claim a process of operating a

device. In addition, claims 17 and 18 detail a TV or box performing the method of claim

1. In these claims, Applicant has failed to disclose any components of the TV or box

that performs the operation of claim 1. Claim 1 is a process of performing a set of

steps. Claims 17 and 18 are a system. There are no structural limitations of the TV or

box, nor any disclosure of how or what components of the TV or box is capable of

performing the steps of claim 1. In addition, claims 17 and 18 do not particular point out

or distinctly claim how the TV or set top box operates a device (claim 1).

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed
> publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5.   Claims 1, 7, 11, 12, 19 and 20 are rejected under 35 U.S.C. 102(a) as being

anticipated by "Best Case Response Time Analysis for Improved Schedulability

Analysis of Distributed Real-Time Tasks" by KIM et al.

As to claims 1, 11 and 12, KIM teaches a method of determining a best-case

response time of a first periodic task, the method comprising: a first step of determining

that the first periodic task has a lower priority than a higher priority of a second periodic

task (pg. 3, "...and hp(i) denotes a set of tasks with higher priority than τ_i on the same

processor node..."); characterized in that the method further comprises: a second step

of determining that the best case response time of the first periodic task is substantially

equal to the difference between a start of the first periodic task and a completion of the

first periodic task, the start being right after a release of the first periodic task and the

completion coinciding with a release of the second periodic task (pg. 3, BCRT Analysis,

"To overcome the shortcomings of GGH method, the proposed BCRT analysis takes

into account relative phase between tasks in the best case. Let Δ denote the minimum

elapsed time between the activation of τ_i and its completion.").

As to claim 7, refer to claim 1 for rejection.

As to claims 19 and 20, KIM teaches the first step of determines that the first

periodic task has the lower priority than a plurality of other tasks (pg. 3, "...and hp(i)

denotes a set of tasks with higher priority than τ_i on the same processor node...") and

the second step determines that the best-case response time of the first periodic task is

substantially equal to the difference between the start of the first periodic task and the

completion of the first periodic task, the start being right after the release of the first

periodic task and the completion coinciding with a release of the plurality of other

periodic tasks (pg. 3, BCRT Analysis, "To overcome the shortcomings of GGH method,

the proposed BCRT analysis takes into account relative phase between tasks in the

best case. Let Δ denote the minimum elapsed time between the activation of τ_i and its

completion.").

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

"Best Case Response Time Analysis for Improved Schedulability Analysis of Distributed

Real-Time Tasks" by KIM et al.

As to claims 13-18, KIM teaches calculating a tighter lower bound on response

time real-time systems based on BCRT and WCRT of tasks (pg. 6). KIM also teaches

the study can be extended to real-time client/server applications with different

communication patterns. However, KIM does not teach that the system is a television

set or set top box. Official Notice is taken in that it is well known in the art that television

sets or set top boxes execute client/server applications and that both devices handle

real-time execution and therefore would be obvious to one skilled in the art that the

inventive teachings of KIM is operable on a television set or set top box in order to

calculate tighter lower bound response time in the real-time television based on the

signals received.

Response to Arguments

8.   Applicant's arguments filed October 27, 2005 have been fully considered but they

are not persuasive. Applicant argues that t2 and t3 are stated as being end-to-end

tasks and not tasks where one has a higher priority than the other as detailed in the claims. The examiner disagrees. The claims detail determining that the first periodic task performed within the device has a lower priority than a higher priority periodic task and determining the best-case response time is equal to the difference between a start of the first task and the completion of the first task. Kim calculates its best case response time by taking into account the relative phase between tasks in the best case (3.2 BCRT Analysis). BCRT of a task occurs when it is least preempted by higher priority tasks and its own execution time is the minimum (section 3.2). For a task to be least prempted by higher priority tasks, it should be activated immediately after higher priority tasks have completed their execution in the best case (section 3.2). Δbi denotes the minimum elapsed time between the activation of τi and its completion. Δbi is obtained from the sum of execution time of τi and the time for which τi is preempted by higher priority tasks. Therefore, Kim teaches determining that a first task has a lower priority than a second task and determining BCRT as equal to the difference between a start of the task and a completion of the task (via considering the priority of task in BCRT Analysis wherein it calculates the BCRT that denotes the minimum elapsed time between the activation of completion of the task). Applicant then argues that best case response time does not provide any disclosure or suggestion for the start of the first periodic task being right after a release of the first periodic task and the completion of the first periodic task coinciding with a release of the second periodic tasks. The examiner disagrees. Kim teaches the handling of different tasks, i.e. a local task and a end-to-end task, and determining the BCRT of each task that are capable of executing

periodically. Kim also teaches that the BCRT analysis takes into consideration for each task the time for which the tasks is preempted by higher priority tasks. Therefore, BCRT analysis for each tasks takes into consideration, the start of a task measured as the release of the first task, and the completion of a task measured as a release of the second tasks (i.e. both be regarded as the time measured for which the current task is preempted by another higher priority task). Regarding claims 13-18, Applicant argues that the claims detail subject matter for implementing the Best Case Response schedulability. The examiner disagrees. There claims do not perform any actual implementation of schedulability. The claims make a determination, e.g. a calculation, of a Best Case Response time for each task. This best case response time is never implemented to schedule the execution of the task. Therefore, the rejection is maintained wherein it would be obvious to one skilled in the art that the real time system or software thereof for determining the BCRT can obvious be a television or set top box.

Conclusion

9.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any
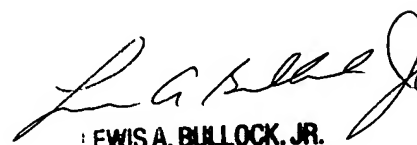
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (571)

272-3759. The examiner can normally be reached on Monday-Friday, 8:30 a.m. - 5:00

p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng An can be reached on (571) 272-3756. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

LEWIS A. BULLOCK, JR.
PRIMARY EXAMINER

January 20, 2006